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SOME INFORMATION ON THE INCIDENCE OF CORN EAR ROTS IN THE 1933 CROP

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The active cooperation of many representatives of the Federal Grain Supervision Service, located in leading markets throughout the United States, has made possible the examination for fungus content of a considerable number of samples of badly damaged corn that arrived at destinations during the period from January to May 1934. The samples came from those cars inspected during the period under review in which total damage was the important factor in grading and showed an average total damage, almost exclusively fungus injury, of nearly 6 per cent. As regards proportion of fungi present, the material studied probably was representative of the crop of the various States as a whole.

Samples from carload lots of known source, in which the quantity of damaged corn was an important factor in determining the numerical grade, were sent into the Chicago office of the Federal Grain Supervision Service from the important terminal markets. These samples, including both sound and damaged separates, after being reviewed were mailed to J. R. Holbert, Bloomington, Illinois, who examined them for evidences of degree of maturity and general quality. The samples were then turned over to P. E. Hoppe, of Madison, Wisconsin, who plated kernels of the damaged separates and identified the fungi present.

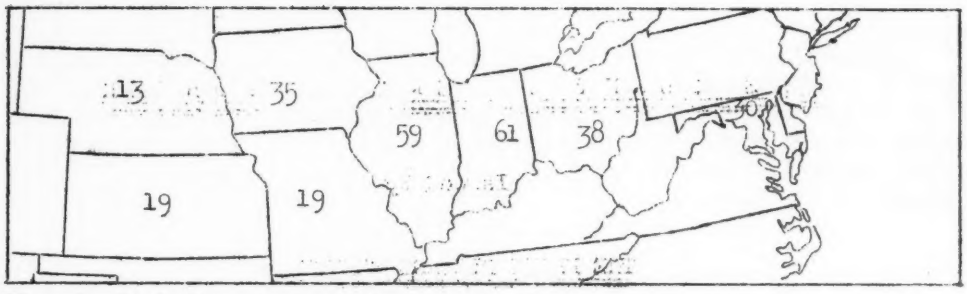

Fig. 9. Diplodia zeae

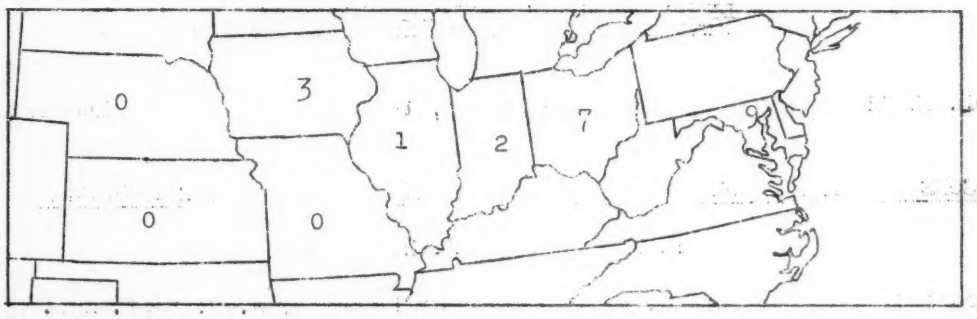

Fig. 10. Gibberella saubinetii

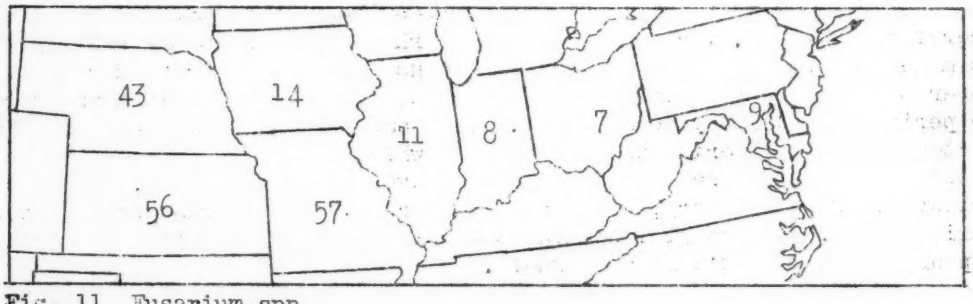

Fig. 11. Fusarium spp.

Figures 9, 10, and 11. Incidence of various fungi in badly diseased commercially damaged lots of corn of the 1933 crop which reached terminal markets from the States indicated, expressed as percentage of the total kernels from which cultures were made. Fig. 9. Diplodia zeae; Fig. 10. Gibberella saubinetii; Fig. 11. Fusarium spp. The number of carlots examined was as follows: Kansas 4, Nebraska 5, Missouri 3, Iowa 14, Illinois 65, Indiana 19, Ohio 29, Delaware 4, Maryland 23.

Fragmentary as this information admittedly is, it nevertheless is more than has been available for any previous crop and thus appears to warrant brief presentation. For the assistance that made this study possible the writers are indebted to the Federal grain supervisors, the licensed grain inspectors, and especially the staff of the general field headquarters at Chicago.

Incidence of the Various Rot Fungi in Badly Diseased Samples from Several States

In considering information obtained as a result of the culture studies three points should be held in mind (1) the findings represent only a single crop - that of 1933; (2) they represent only what appeared in badly diseased samples at terminal markets - not field run; (3) a number of important corn-producing States were represented by relatively few samples. The predominance of Diplodia zeae in these samples is evident. This fungus, long recognized as an important cause of corn-ear rot, was found in more than half the diseased kernels from Illinois and Indiana and more than a third of those from Iowa and Ohio (fig. 9). Other well-known corn fungi, Gibberella saubinetii and Fusarium spp., were found in the amounts indicated by figures 10 and 11. The extent to which numerous fungi, not recognized as important corn-ear rots, enter into and somewhat complicate the problem is evidenced by the large percentage of miscellaneous, partly unidentified fungi found in the cultures. These miscellaneous fungi amounted to 50 per cent of the total in some States and at least 25 per cent in all States. The fragmentary nature of our knowledge of corn-rot fungi outside the Corn Belt is emphasized by the fact that a single fungus, not hitherto recognized on corn and so far sterile in our cultures, appeared in more than a tenth of the cultures made from Maryland and Delaware samples.

Distribution of Ear Rots in the 1933 Corn Crop

In order to obtain a somewhat more general picture of the distribution of corn-ear rots than is possible by the intensive methods used in the study just reported, a nation-wide market survey of corn received at terminal markets in May 1934 was arranged. May was chosen for this survey, since by this time the moisture of the corn was generally low and total damage entered as a major factor in determining grade. Licensed inspectors throughout the country determined damage in all corn receipts from country points during that month, and the supervisors tabulated and reported the material. In all, reports were received on 7,169 cars inspected at 68 terminal markets. For these markets, taken together, 28 per cent of the cars showed from 2 to 2.9 per cent of total damage, 36 per cent showed from 3 to 3.9 per cent total damage, 11 per cent showed 4 to 4.9 per cent total damage, and 18 per cent of the cars showed 5 or more percent of total damage, recognized chiefly as fungus rots.

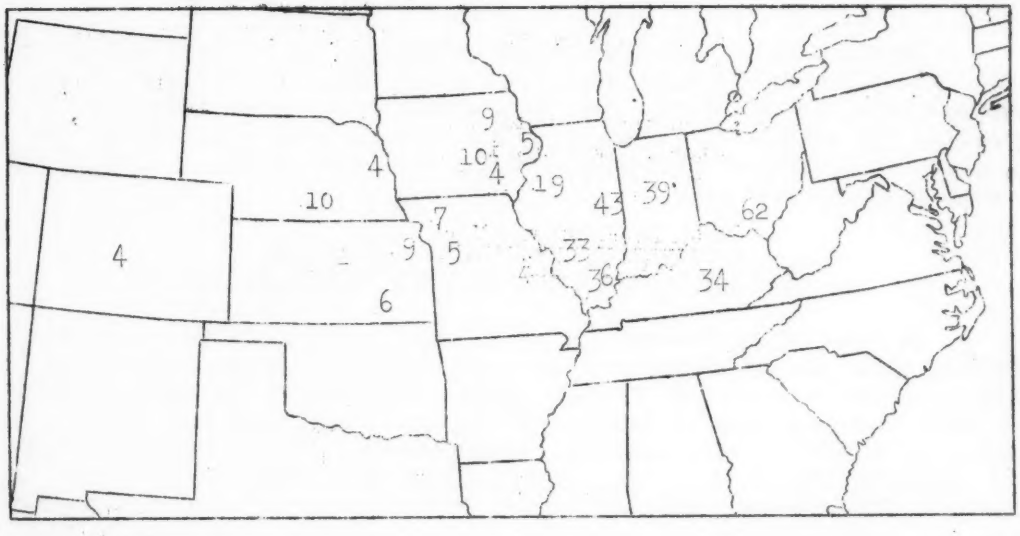

Fig. 12. Distribution of ear rots in the 1933 corn crop expressed as percentage of cars examined May 1934 which showed over 5 per cent total damage.

Obviously, a survey based on corn received at terminal markets gives a less accurate picture of the distribution of corn-ear rots than one in which the State of origin of the corn is known. However, if there are eliminated all markets from which less than 50 cars were reported, as well as certain terminals such as Buffalo, Chicago, and Milwaukee, where corn is regularly received from a great variety of widely scattered growing areas, there remain a number of important terminals in which the corn received in May 1934 was largely grown nearby or somewhat west of the indicated market.

On the basis of this survey as shown by figure 12, it is apparent that in the 1933 corn crop ear rots were of greatest importance in the Ohio Valley and central and southern Indiana and Illinois and relatively of much less importance in Colorado, Nebraska, Kansas, and Iowa. Certain factors, generally recognized as favoring increased ear rots, were operative east of the Mississippi in 1933. Among these are late planting due to heavy rains in many areas and heavy chinch-bug damage in much of Illinois. On the other hand, in regions west of the Mississippi plantings were made at a more nearly normal time, growing conditions were more favorable, and an unusually long season permitted the crop to dry out well in the field before harvest.

KEEPING QUALITY OF CAPE COD CRANBERRIES OF THE 1934 CROP

Neil E. Stevens

In continuation of a series of experimental forecasts of the keeping quality of Massachusetts cranberries, the first of which was made in 1923, it was forecast on September 13 that the 1934 crop would be "well above the average in keeping quality." This prediction which was distributed to State officials, marketing agents, inspectors, and interested growers generally was based on four considerations. Temperatures during the spring were rather high, well into what we regard as the danger zone. On the other hand there were relatively few days with rain in July and August which is decidedly favorable to good keeping quality. Also the crop was rather small and other things being equal, small crops tend to keep better than large ones. Finally, the results of the regular "incubator tests" of samples from selected bogs run during the first week in September were decidedly favorable.

As a means of securing a somewhat more exact check of these forecasts than is afforded by general observations and market reports, storage tests have been conducted each year since 1926. These tests, which since 1930 have been handled entirely by Mr. Walton Truran are made by placing bushel lots of cranberries from a series of bogs chosen as representative of the area in storage at the "State Bog" East Wareham, Massachusetts.

Counts of sound and rotten berries are made on October 15, the height of the shipping season for the Early Blacks, and again on November 15, the height of the shipping season for Howes. The results of these tests are summarized in Table 13. The accuracy of the 1934 forecast and the generally high quality of the 1934 crop are both indicated by the fact that average decay in the Early Black cranberries on October 15 is the smallest since 1930 and that of the Howes on November 15 the smallest since the tests were begun. These two varieties make up the bulk of the Cape Cod cranberry crop.

Table 13. Average condition of storage lots of Massachusetts cranberries. Expressed as percentage of rotten berries.

Variety	1926	1927	1928	1929	1930	1931	1932 Other than State bog	1932 Including State bog	1933	1934
October 15										
Early Black	3	5	3	7	6	21	5	13	17	8.5
Howes	-	-	3	4	3	8	2	4	4	2
November 15										
Early Black	15	10	7	11	13	31	12	25	24	13
Howes	-	-	6	9	7	14	7	14	5	4.5

LEAF SPOT ON WILD HAZEL IN OREGON

A leaf spot disease of the native wild hazel, Corylus californica, collected September 27, 1933 by Dr. S. M. Zeller of the Oregon Experiment Station near Canby, Oregon and recently turned over to the writer, has been identified as due to Gloeosporium coryli (Desm.) Sacc. This particular leaf spot has not been found on wild hazel by the author so far this season. While Gloeosporium coryli has been reported during the past on the cultivated filbert, Corylus avellana, in Europe, it has never been noted by the writer on the cultivated filbert in Oregon. (P. W. Miller, Oct. 1, 1934.)

DUTCH ELM DISEASE FOUND AT NORFOLK, VIRGINIA

Previous research findings that the Dutch elm disease, caused by Ceratostomella ulmi, entered and has moved through parts of the United States on burl elm logs imported from Europe for cutting fancy veneer are further confirmed by the discovery of an infected tree at Norfolk, Virginia, by W. M. Banfield of the Emergency Conservation Work and the Division of Forest Pathology. The tree was located not far from the piers where in past years imported (infected) logs have been discharged from vessels and near the street along which the logs were hauled to a veneer factory. (R. Kent Beattie, Nov. 28, 1934.)